

# MOBILE GAC UNITS CREATE POTABLE WATER FOR BACKWASH CENTRAL CALIFORNIA WINERY REMOVES 1,2,3-TCP FROM WELL WATER USING GRANULAR ACTIVATED CARBON

## BACKGROUND

North of Fresno in the San Joaquin Valley of California, a winery detected elevated levels of 1,2,3-Trichloropropane (1,2,3-TCP) in the water coming from its two main wells. A chlorinated hydrocarbon, 1,2,3-TCP is a chemical associated with old pesticide practices (particularly soil fumigants) and is a suspected human carcinogen. Needing the well water to be safe for farm workers and crop irrigation, the winery hired Woodard & Curran to oversee the engineering, design, and construction of two water treatment systems.

Located in the middle of agricultural fields, the wells did not have access to potable water, which complicated typical installation procedures. Before being placed into service, GAC filter media must be conditioned for use, a process that includes soaking the GAC for 24 hours, then backwashing the GAC to remove fines, stratify the media and remove any entrained air for efficient and maximum performance. For this project, the only water source was the two wells needing treatment, and water from those wells was contaminated with constituents of concern and sediment.

## AQUEOUS VETS PROJECT SCOPE

Woodard & Curran turned to Aqueous Vets® (AV®) to help supply potable water for GAC systems startup. AV's solution was to design and mobilize a portable treatment system to pre-treat the well water for two weeks before system installation. The treated water, which was chlorinated and stored in frac tanks, was then used for the disinfection process of the vessel prior to media fill, then again after media fill for the conditioning process.

AV's treatment system for each well site included GAC systems, the first consisting of one 10-foot diameter lead lag system and the second, one 12-foot diameter lead lag system. The combination was designed to handle a flow up to 1,300 gpm. Both systems utilized virgin coconut carbon to reduce 1,2,3-TCP to below 5 ppt. AV's preassembled vessels included all ancillary piping connected to the vessel to ensure quick installation, as well as pipe manifolds and pipe modules. The overall vessel install time was less than one day.

<b>PROJECT LOCATION</b> Central California	<b>PROJECT TIMEFRAME</b> March 2021 – March 2022	<b>AV® SCOPE OF WORK</b> 2 – GAC Treatment Systems (4 Vessels)	<b>GENERAL CONTRACTOR</b> Thomas C. Williams, Inc.
<b>PROJECT TYPE</b> Design, Manufacture, Supply	<b>PROJECT PHASE</b> Complete	<b>END USER</b> Central CA Winery	<b>DESIGN ENGINEER</b> Woodard & Curran

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AVP-0030 Rev. 09/22/2022



KEY GAC SYSTEM DESIGN & OPERATIONAL PARAMETERS	PF 10-720 GAC SYSTEM	PF 12-730 GAC SYSTEM
Number of Systems/Vessels per System	1/2	1/2
Operating Configuration	Parallel/Lead-Lag	Parallel/Lead-Lag
Carbon Capacity/Volume per Vessel	602 ft <sup>3</sup>	963 ft <sup>3</sup>
Carbon Type	Coconut Shell	Coconut Shell
Design Flow Rate	500 gpm	800 gpm
Hydraulic Loading	6.5 gpm/ft <sup>2</sup>	7.2 gpm/ft <sup>2</sup>
Empty Bed Contact Time per Vessel	9 minutes	9 minutes
Underdrain	Septa/External Ring Header	Septa/External Ring Header
Overall System Height to Top of Pipe	16'-10"	18'-0"

